

REMARKS

This amendment is submitted in response to the Office Action dated August 19, 2004. Reconsideration and allowance is requested.

Claim Rejection Under 35 U.S.C. 103

In Section 3 of the Office Action, the Examiner rejected claims 1, 3, 6, 9, and 11 - 15 under 35 U.S.C. 103 as being unpatentable over Bian et al. (6,593,009 B2) in view of Lal et al. (5,849,386).

Antedating 6,593,002 B2 Reference Under 37 CFR 1.131

This application claims priority to US Provisional Application Number 60/274,101, which was filed on March 7, 2001. The Applicants have submitted a declaration under 37 CFR 1.131 declaring that the contents of US Provisional Application Number 60/274,101 were prepared prior to March 2, 2001, which is the filing date of the Bian reference 6,593,002, cited by the Examiner. Support for the claims can be found throughout US Provisional Application Number 60/274,101 and specifically in the portion of the provisional application ranging from the bottom of page 1 to the top of page 3. Support is also clearly found in figures 1 - 4 and in tables I - III. Since the Applicants have provided a declaration and evidence establishing that their invention occurred prior to the March 2, 2001 filing date of the Bian reference 6,593,002, the Applicants request that the Examiner remove this reference as prior art. Since this reference is not prior art, the Applicants submit that the rejection of claims 1, 3, 6, 9, and 11 - 15 under 35 U.S.C. 103 has been overcome and request the Examiner to remove his rejection and allow the claims.

Arguments

Even if the Bian (6,593,002) reference is not removed as prior art, the rejection under Bian is traversed and argued. In Section 3 of the Office Action, the Examiner stated:

Bian et al. ('009 B2) fail to disclose mechanically texturing the non-magnetic substrate, nor the orientation ratio of the magnetic moment (OR-Mrt) of the recording medium....However, Lal et al. teach 'longitudinal magnetic recording media of the type of use in computer disc drives' (col. 1, lines 49-51) comprising a 'nickel-phosphorous-coated aluminum substrate which has been circumferentially textured' (col. 1, lines 53-55 and col. 4, lines 1-17) which are characterized by the orientation ratio, wherein the orientation ratio is the ratio of either Mr, Hc or S*, in the tangential or in plane circumferential direction to values in the radial direction' (col. 1, lines 56-57). Lal et al. further discloses that 'which orientation value reported is often a function of convenience' and that 'media prepared as described above typically have a higher magnetic remanence, coercivity or coercive squareness in the in-plane circumferential direction compared to the radial direction. Such media are referred to as 'oriented' or 'anisotropic' and are characterized by having an orientation ratio value unequal to one. For anisotropic media prepared on a circumferentially textured substrate, the orientation ratio can be as high as ten, although typical values are between about 1.1 to 1.5 (col. 2, lines 1 - 16).

The Applicants vigorously traverse.

In order to establish *prima facie* obviousness of a claimed invention three basic criteria must be met. First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. See *In re Vaeck*, 947 F.2d

488, 20 USPQ2d 1438 (Fed. Cir. 1991) And MPEP 2143. The Applicants respectfully submit that the Examiner has not satisfied all three criteria outlined in MPEP 2143.

First, the Examiner has not met his burden of showing that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The Examiner's reason for combining Bian et al. (6,593,009 B2) in view of Lal et al. (5,849,386) are that:

It would therefore have been obvious to one skilled in the art at the time of the applicant's invention to modify the longitudinal recording medium of Bian et al. ('009 B2) to use a circumferentially oriented substrate with an OR-Mrt value more than about 1.05 as taught by Lal et al., since Lal et al. teach that such a substrate leads to OR values exceeding applicants' claimed minimum value and indicate a high degree of in-plane circumferential orientation, which is desired by Bian et al. for longitudinal recording.

The Applicants submit that the Examiner is not reading Bian correctly because Bian discusses crystallographic orientation instead of magnetic orientation and does not desire a high degree of in-plane circumferential orientation for longitudinal media as taught in the claimed invention. The Examiner states that "Bian et al. ('009 B2) disclose...depositing a magnetic layer comprising a Co(11.0) crystallographic orientation on the B-2 structured ruthenium-aluminum-containing underlayer (element 34 and col. 4, lines 60 - 62), wherein the magnetic recording medium is an oriented medium (col. 2, lines 28 - 32 and lines 48 - 52 and col. 4, lines 62 - 64: 'good in-plane orientation which is desirable for longitudinal magnetic recording')." Bian's use of the word orientation refers to crystallographic orientation, as is clearly indicated in column 4 lines 54-64, and not magnetic orientation. The Examiners use of "col. 4, lines 62 - 64: 'good in-plane orientation which is desirable for longitudinal magnetic recording' " is misleading when

read out of context of its surrounding paragraph which clearly shows that Bian is referring to X-ray crystallographic orientation and not magnetic orientation. **Therefore since Bian is not suggesting, teaching or alluding to magnetic orientation there is no reason for one skilled in the art to read Bian and think of using Lal to get a magnetically oriented media.**

Even if Bian did teach magnetic orientation instead of crystallographic orientation, the Examiner is taking the teachings of Lal out of context and making the huge assumption that it would have been obvious for one of ordinary skill in the art to use the textured substrates of Lal in Bian to make oriented media. In fact, there are at least four places where Lal stresses that textured substrates are not needed to make oriented media. Lal states:

- 1) "Isotropic media can be deposited on either textured or non-textured substrates, with non-textured or superpolished substrate surfaces offering the advantages of avoiding texture-induced defects, such as so-called 'scratch' anisotropy, and allowing the read-write head to fly at or below sub-microinch levels." (column 2 lines 23-28)
- 2) "In one embodiment, the substrate in the medium is circumferentially textured. In another embodiment, the substrate is polished." (column 2 lines 42-44)
- 3) "Substrate 12 may be a textured or non-textured substrate of metal or non-metal, such as glass or ceramic." (column 4 lines 1-2)
- 4) "The prelayer is effective to reduce circumferential/radial anisotropy of media formed on a textured substrate or on a non-textured substrate." (column 12 line 67 -column 13 line 2)

It is difficult to believe that one skilled in the art would actually believe that Lal is encouraging the use of textured substrates to obtain oriented media when he clearly teaches that it makes no difference. One skilled in the art who reads Bian and wants to get oriented media would not look at Lal and conclude that texture would solve his

problems but instead would look at Lal and conclude that texture would have no effect on oriented media.

There is absolutely no reason or motivation to combine the teachings of Bian et al. (6,593,009 B2) with the teachings of Lal et al. (5,849,386) to use the textured substrates of Lal to get oriented media. In fact, Lal teaches away from using textured substrates to get oriented media because he repeatedly says that it does not matter if the substrate is textured or not textured. **There is absolutely no reason to conclude from the teachings of Lal that using a textured substrate will be beneficial in obtaining oriented media.** Therefore, in view of these arguments, the Applicants respectfully request that the Examiner reconsider his rejection of claims 1, 3, 6, 9, and 11 - 15.

Second, the Examiner has not shown that there is any reasonable expectation of success. As discussed above, Lal himself teaches that there is no difference between using textured and untextured glass substrates. Therefore, there is no reasonable expectation of success because as explained above there is no reason to conclude from the teachings of Lal that using a textured substrate will be beneficial in obtaining oriented media.

In view of these remarks the Applicants respectfully request that the Examiner reconsider and withdraw his rejection of claims 1, 3, 6, 9, and 11 - 15 under 35 U.S.C. 103 as being unpatentable over Bian et al. (6,593,009 B2) in view of Lal et al. (5,849,386).

In section 4 of the Office Action, the Examiner also rejected claims 4, 5, 17, and 18 under 35 U.S.C. 103(a) as being unpatentable over Bian et al. ('009 B2) in view of Lal et al. ('386), as applied above, and further in view of Chen et al. (WO 98/16923) and

Abarra et al. (U.S. Patent No. 6,613,460 B1). The Applicants respectfully submit that the Examiner has not satisfied all three criteria outlined in MPEP 2143 for the same reasons stated above. Specifically, Bian et al. ('009 B2) should be removed as prior art, there is no reason for one skilled in the art to read Bian and think of using Lal to get a magnetically oriented media, there is no reason to conclude from the teachings of Lal that using a textured substrate will be beneficial in obtaining oriented media, and no evidence has been provided to suggest that there is any reasonable expectation of success.

Furthermore, the Examiner acknowledged that neither Bian et al. ('009 B2) nor Lal et al. disclose oxidizing the textured NiP layer but that:

Chen et al. (WO '923) teach that sputter depositing an oxidized NiP layer to be used under an underlayer with a (200) crystallographic orientation results in a magnetic recording medium "enjoying the advantages derived from a small grain size...underlayer while achieving low medium noise and high coercivity suitable for high density longitudinal magnetic recording" (page 6, lines 15 - 20; page 7, lines 1 - 10; page 8, lines 22 - 34; and page 16, lines 18 - 20). Abarra et al. provides explicit teaching that it is known in the longitudinal recording art that "the NiP layer...is preferably oxidized and/or mechanically textured" (col. 1, lines 7-11 and col. 4, lines 14-20).

The Examiner's reason for combining Chen with Bian and Lal are that:

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Bian et al. ('009 B2) in view of Lal et al. to include an oxidized NiP layer as taught by Chen et al., since such an oxidized NiP layer results in a magnetic recording medium "enjoying the advantages derived from a small grain size...underlayer while achieving low medium noise and high coercivity suitable for high density longitudinal magnetic recording."

In his rejection, the Examiner has done nothing more than find the different elements of the claimed invention in various unrelated sources and combined these elements together using hindsight to come up with his rejection without ever giving any reason to

suggest that the combination would work. **There is absolutely no reason to believe that the Examiner's mixing and matching of different layers to make up the claimed invention would work.** By combining these references the Examiner is essentially saying that the oxidized NiP layer taught by Chen et al. would work with a B2-structured ruthenium-aluminum containing underlayer comprising a (200) crystallographic orientation to give a magnetic recording media comprising a magnetic layer comprising a Co(11.0) crystallographic orientation, wherein the non-magnetic substrate is mechanically textured and OR-Mrt of the magnetic recording medium is more than about 1.05, thereby the magnetic recording medium is an oriented medium. The Examiner's assertion that it would have been obvious to combine these references to make the claimed invention is unfair, considering the complexity of the interaction between the different layers in a thin film structure such as the one claimed. If it were so simple to merely combine layers having different properties and come up with an end result that works and exhibits the advantages of all the layers then there would be no need for research and development because engineers could simply look up a layer and its properties and combine different layers to make the desired thin film structure. However, this is not the case and engineers cannot just combine layers to make a final structure without considering the complex interaction between the different layers. Quite often those effects are not known until the layered structure is actually built and analyzed. The Examiner has not provided motivation for combining the two references nor provided any reasonable expectation of success.

Therefore the Applicants submit that the Examiner has not met his burden for rejecting claims 4, 5, 17, and 18 under 35 U.S.C. 103(a) and request that the Examiner remove his rejection and allow the claims.

In section 5 of the Office Action, the Examiner also rejected claims 7, 8, and 19 35 U.S.C. 103(a) as being unpatentable over Bian et al. ('009 B2) in view of Lal et al., Chen et al. (WO '923) and Abarra et al. as applied above, and further in view of Chen et al. (U.S. Patent No. 5,866,227). The Applicants respectfully submit that the Examiner has not satisfied all three criteria outlined in MPEP 2143 for an obviousness rejection under 35 U.S.C. 103(a) for the same reasons stated above and respectfully request that the Examiner withdraw his rejection and allow the claims.

In section 6 of the Office Action the Examiner rejected claims 10 and 16 under 35 U.S.C. 103(a) as being unpatentable over Bian et al ('009 B2) in view of Lal et al. as applied above, and further in view of Bian et al. (U.S. Patent No. 6,586,116 B1). Again, the Applicants submit that the Examiner has not met his burden for establishing a *prima facie* case for obviousness. Since the Examiner has used the same reasoning, as previously used in section 4, for combining Bian et al. (U.S. Patent No. 6,586,009 B1) and Lal et al. (5,849,386) which is that:

It would therefore have been obvious to one skilled in the art at the time of the applicant's invention to modify the device of Bian et al. ('009 B2) in view of Lal et al to use a Ru-Al layer meeting applicants' claimed thickness values as taught by Bian et al. ('116 B1), since the thickness of the Ru-Al layer is not overly critical to practicing the claimed invention and using a layer meeting applicants' claimed limitations is taught by Bian et al. ('116 B1) as suitable for practicing longitudinal recording while avoiding the expensive of a thick Ru-based layer (col. 2, lines 61-64),

the arguments from above in section 4 follow. Specifically, there is **no reason to conclude from the teachings of Lal that using a textured substrate will be beneficial**

in obtaining oriented media. Therefore the Applicants respectfully request that the Examiner reconsider his rejection of claims 1, 3, 6, and 9 -16 under 35 U.S.C. 103(a) as being unpatentable over Bian et al. (U.S. Patent No. 6,586,116 B1) in view of Lal et al. ('386).

In section 7 of the Office Action, the Examiner rejected claims 1, 3, 6, and 9 -16 under 35 U.S.C. 103(a) as being unpatentable over Bian et al. (U.S. Patent No. 6,586,116 B1) in view of Lal et al. ('386). Again, the Applicants submit that the Examiner has not met his burden for establishing a *prima facie* case for obviousness. Since the Examiner has used the same reasoning, as previously used in section 4, for combining Bian et al. (U.S. Patent No. 6,586,116 B1) and Lal et al. (5,849,386) which is that:

It would therefore have been obvious to one skilled in the art at the time of the applicant's invention to modify the longitudinal recording medium of Bian et al. ('116 B2) to use a circumferentially oriented substrate with an OR-Mrt value more than about 1.05 as taught by Lal et al., since Lal et al. teach that such a substrate leads to OR values exceeding applicants' claimed minimum value and indicate a high degree of in-plane circumferential orientation, which is desired by Bian et al. (116 B1) for longitudinal recording,

the arguments from above in section 4 follow. Specifically, there is **no reason to conclude from the teachings of Lal that using a textured substrate will be beneficial in obtaining oriented media.** Therefore the Applicants respectfully request that the Examiner reconsider his rejection of claims 1, 3, 6, and 9 -16 under 35 U.S.C. 103(a) as being unpatentable over Bian et al. (U.S. Patent No. 6,586,116 B1) in view of Lal et al. ('386).

In section 8 of the Office Action, the Examiner rejected claims 1, 3 - 6, and 9 -18 under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. Patent No. 6,596,419 B1) in view of Lal et al. ('386), Abarra et al. ('460 B1) and Ueno (U.S. Patent No.

6,159,625). The Examiner has provided provisional application (60/236,011) which Chen et al. ('419 B1) is based on and has an effective filing date of 9/27/2000. The Applicant's traverse this rejection.

Chen et al. (U.S. Patent No. 6,596,419 B1) is Not Prior Art Under 35 U.S.C. 103(c)

The Applicants do not admit that Chen ('419) is prior art. Moreover, although the Examiner did not indicate what type of prior art Chen ('419) qualifies under, it appears that if Chen ('419) is prior art, then it can only qualify as 102(e) prior art. Under 35 U.S.C. 103(c), subject matter is disqualified as prior art if the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. Here, Chen et al. (U.S. Patent No. 6,596,419 B1) and the claimed invention were commonly assigned to Seagate Technology LLC at the time the invention was made. The assignment of U.S. Patent No. 6,596,419 B1 from the inventors to Seagate Technology LLC can be found in Reel/Frame 12224/0720 and is shown in the attached patent assignment abstract from the USPTO. Therefore, the Applicants respectfully request that the Examiner disqualify Chen et al. (U.S. Patent No. 6,596,419 B1) as prior art and withdraw his rejection of claims 1, 3 - 6, and 9 -18 under 35 U.S.C. 103(a).

In section 9 of the Office Action, the Examiner rejected claims 7, 8, and 19 under 35 U.S.C. 103(a) as being unpatentable over Chen et al. ('419 B1) in view of Lal et al. and Ueno as applied above and further in view of Chen et al. ('227). Since Chen et al. ('419 B1) should be disqualified as prior art for the reasons given above, the Applicants

respectfully request that the Examiner withdraw his rejection of claims 7, 8, and 19 under 35 U.S.C. 103(a).

Conclusion

In light of the above remarks, this application should be considered in condition for allowance and the case passed to issue. If there are any questions regarding these remarks or the application in general, a telephone call to the undersigned would be appreciated to expedite prosecution of the application.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 19-1036**. Please credit any excess fees to such deposit account.

Respectfully submitted,
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(Assignee of Entire Interest)

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